

The Utilization of Various Plant Type by the Community of Gunung Bunder Dua Village, Bogor Regency as a Resource of Biology Learning Process

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Abstract

The community of Gunung Bunder Dua Village, Bogor Regency is one area that still has plant knowledge and local wisdom in their daily life. This research aims to reveal the local wisdom of Gunung Bunder Dua villagers, Bogor Regency. The method used in the form of direct observation in the field with interview by selected speaker. This research was conducted from 17th June to 17th July 2019 at the village of Gunung Bunder Dua, Bogor Regency, West Java. The observations recorded were 72 species and 40 plant families, with some varieties of uses, namely 19 species of food plants, 56 species of medicinal plants and 3 species of economic value plants. The result of this research are used as source of biology learning such as a video containing ethnobotany information.

Abstrak

Masyarakat Desa Gunung Bunder Dua, Kabupaten Bogor termasuk salah satu daerah yang masih memiliki pengetahuan tumbuhan dan kearifan lokal dalam kehidupan sehari-harinya. Penelitian ini bertujuan mengungkap kearifan lokal masyarakat desa Gunung Bunder Dua, Kabupaten Bogor. Metode yang dilakukan berupa observasi langsung di lapangan dengan wawancara kepada narasumber terpilih. Penelitian ini dilakukan dari tanggal 17 Juni – 17 Juli 2019 bertempat di Desa Gunung Bunder Dua, Kabupaten Bogor, Jawa Barat. Terdapat 72 spesies dan 40 famili tumbuhan, dengan beragam kegunaan yaitu tumbuhan pangan 19 spesies, tumbuhan obat 56 spesies, dan tumbuhan bernilai ekonomi sebanyak 3 spesies. Hasil penelitian ini dijadikan sumber belajar biologi berupa video yang berisikan informasi etnobotani.

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A. Introduction

Indonesia is a country with a very high biodiversity of natural resources, where this variety has become a necessity for the Indonesian people to be maintained and developed so that it can show its potential. According to WHO (2014), it is explained that there are approximately 60% of the world's plant population that has been used by humans. Whether it's use as a medicinal ingredient, foodstuff, even as an increase in economic value.

There is also the use of living natural resources, especially plants that are used by the Indonesian people, in fact, they already have

provisions for the study of local knowledge of the utilization of living natural resources from generation to generation, but this has no impact on the progress of the world of science and technology. So that in the end many researchers came down to start studying these local knowledges.

The study of knowledge about the plant world creates an interaction between living things and their environment. According to Purnawan (2006), the contribution of ethnobotany studies is closely related to the interaction of community approaches with the plant world, as well as helping

to record local wisdom to be remembered in the future.

Gunung Bunder has a place called Kuta Genggelang. Where Gunung Bunder is a village with a large enough area in 1984 there was a regional expansion, namely the formation of Gunung Bunder Satu Village and Gunung Bunder Dua Village. There is also infrastructure in Gunung Bunder Dua Village, namely in the form of village offices, road paving, Cisalada irrigation, Pasar Rebo Village Office, Mt. Malang, auxiliary health center, integrated health service post at hamlet. 02, and the Village Security Post. Gunung Bunder Dua Village, Bogor Regency in general has topographic and contour conditions in the form of highlands and mountains at an altitude of 700 - 800 M above sea level, with an average temperature of 23° - 28° C. The research on the use of plants has been done before, such as Camelia, Afriyansyah, & Juairiah (2019) regarding to the Ethnobotany Study of Jerieng Food Plants in Simpang Teritip District, West Bangka Regency. Adhil, Iqbal, & Ramadanil (2019), Ethnobotany Study of the Euphorbiaceae Family Utilized by the Pekurehua Tribe in the Villages of Wasa and Waduwa, Lore Utara District, Poso Regency, Central Sulawesi. Based on the description, the theme of this research was namely a study related to plant ethnobotany used by the people of Gunung Bunder Dua Village, Pamijahan District, Bogor Regency, West Java.

Gunung Bunder Dua Village, Bogor Regency is one of the areas where the community still has knowledge of land and local wisdom. The people of Gunung Bunder Dua Village still depend a lot on the natural resources of the plants around them, so that knowledge of local wisdom about the use of plants needs to be documented so that they do not become extinct.

B. Materials and Method

This research is a descriptive observative research with the sampling technique in the form of purposive sampling. Plant utilization data were obtained through semi-structured interviews with 15 selected respondents, consisting of the village head, village officials, makbeurang/traditional birth attendant, people who use plants, and people who have knowledge of the use of plants. Data collection was taken in 17th June - 17th July 2019 at Gunung Bunder Dua Village, Pamijahan District, Bogor Regency, West Java.

C. Results and Discussions

The potential use of plants based on interviews that have been done by 15 keys information people from Gunung Bunder Dua Village, Bogor Regency, is known that there are 72 species from 40 plant families commonly used by the community.

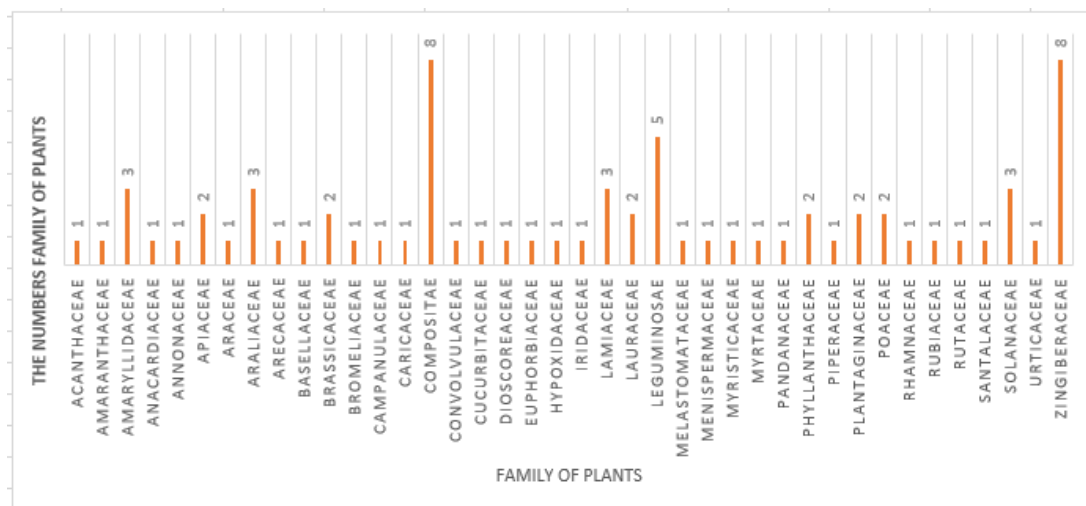


Figure 1 Numbers of Plant Family Used

The plant families that most used by the people of Gunung Bunder Dua Village are the Zingiberaceae and Compositae Tribe. The Zingiberaceae Family is a type of plant that is often found in Indonesia, this plant belongs to the group of finds have a distinctive rhizome and aroma (Auliani, Fitmawati, & Sofiyanti, 2014). In the daily life of the people of Gunung Bunder Dua

Village, there are eight types of plants from the Zingiberaceae tribe that are used by the community as food and medicinal plants. This type of plant from the Zingiberaceae tribe is *Alpinia galanga* (L.) Willd. (lengkoas), *Amomum compactum* Sol. Ex Maton, *Curcuma longa* L. (kapol), *Curcuma zedoaria* (Christm.) Roscoe (koneng bodas), *Etilingera elatior* (Jack) R.M.Sm. (honje),

Kaempferia galangan L. (galangal), *Zingiber aromaticum* Valetton (lempuyang) and *Zingiber officinale* Roscoe (red ginger). As for the Compositae tribe, there are eight types of plants used by the community, namely *Ageratum conyzoides* (L.) L. (jukut bau), *Blumea balsamifera* (L.) DC. (sembung), *Cosmos caudatus* Kunth (kenikir), *Crassocephalum crepidioides* (Benth.) S.Moore (sintrong), *Lactuca sativa* L. (dry lettuce), *Pluchea indica* (L.) Less. (bluntas), *Stevia rebaudiana* (Bertoni) Bertoni (stevia), and *Tithonia diversifolia* (Hemsl.) A.Gray (bitter ki).

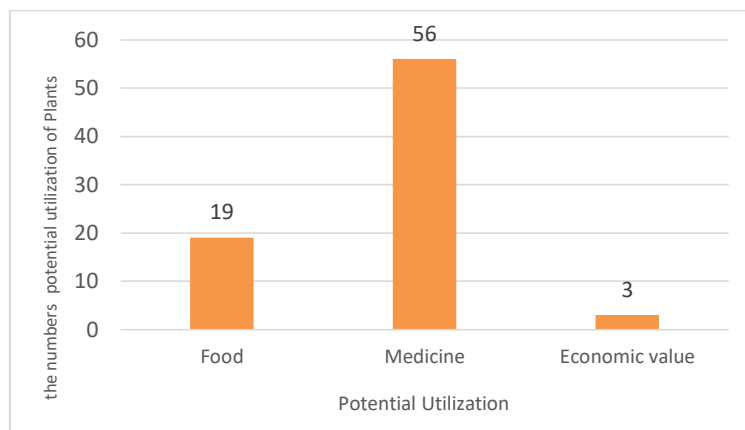


Figure 2 the Potential Utilization of Plants

The plants that used by the people of Gunung Bunder Dua Village are grouped into food plants, medicinal plants and plants with economic value. Figure 2 shows that the plants most used by the people are medicinal plants (56 species).

The plant of *Etilingera elatior* (Jack) R.M.Sm. (honje), *Hydrocotyle sibthorpioides* LAMK (antan an beurit), *Staurogyne elongata* Kuntze (reundeu) and *Syzygium polyanthum* (Wight) Walp (bay leaf). Apart from being potential as medicine, it is also used by the people as vegetable food.

Basically all plants are multipurpose species. According to (Burley & Wood, 1991), multipurpose species are species that have more than one function. Likewise with the opinion (Nair, 1993), when all plants are multipurpose species, but among the many species there are species that have more benefits. In obtaining the benefits of plants, it obtained from the cultivation of their own yards and those around the society. The people process the plants used by a single formula and a mixture of various types of plants. The part of the plant that is most widely used by the people is the leaf part. According to (Hamzari, 2008), the leaves are easy to obtain, easy to process and easy to mix and contain many useful substances compared to other parts.

Food plants are plants used by humans to fulfill the food needs and can be a source of energy for human body. There are 19 plant species used by the people of Gunung Bunder Dua Village as food.

The human needs for food is a need that must be fulfilled. According to (Soemarwoto, 1985), food is a substance that can build and

maintain the cells of the human body properly. So that in the process of using food plants to become a main or additional food ingredient is very important for humans. There is also a food plants that have become the icon of Gunung Bunder Dua Village, namely *Ipomoea batatas* (L.) Lam. (sweet potato) dan *Allium schoenoprasum* L. (chives), the two plants were used as village icons because of the environmental conditions that supported cultivation, thus this situation made many people work as garden farmers.



Figure 3
Garden *Ipomoea batatas* (L.) Lam. dan *Allium schoenoprasum* L.

According to (Titiek, Djaafar, Sarjiman, & Pustika, 2010), at an altitude of 500-700 MASL is one of the optimal productivity of *Ipomoea batatas* (L.) Lam (sweet potato) to be cultivated, as for *Allium schoenoprasum* L. (chives) in addition to the environmental conditions that support and the addition of watery soil conditions, the planting age

is around 3-4.5 months. Therefore, people are interested in becoming chives farmers.

The potential of plants used as vegetables is recorded as many as 15 species. The parts used are tubers and leaves, there is also processing of vegetable plants by cooking such as *Amaranthus tricolor* L. (spinach), *Psophocarpus tetragonolobus* (L.) DC (winged bean), and so on, while those which are consumed directly such as *Hydrocotyle sibthorpioides* LAMK (antanan beurit), *Pilea melastomoides* (Poir.) Wedd (poh-pohan) and so on.

The potential of plants as food additives. The plants food can be delicious, interesting and durable requires an additional ingredient. According to (Astawan, 2003), to serve the dishes that have specific physiological functions for the body in addition to good nutritional composition and interesting taste, appropriate food additives are needed.

The Food Additives are not included in food raw materials, but are materials that naturally used

to be mixed with food ingredients (Apriliani, Sukarsa, & Hidayah, 2014). Kaffir lime (*Citrus hystrix* DC) a flavor enhancer, pandanus (*Pandanus amaryllifolius* Roxb) a food fragrance, harendong (*Melastoma affine* D.Don) and pepaya (*Carica papaya* L.) meat tenderizer in Gunung Bunder Dua Village.

According to (Saparinto & Hidayati, 2006), the food additives sources are grouped into natural and artificial Food Additives. Natural food additives are easy to obtain, safe to use, while artificial food additives are feared to cause side effects because it comes from synthetic ingredients. Where the use of synthesis materials requires a predetermined dose.

The lants that are used as medicine have more species than other uses. In the data obtained, people who use plants as medicine are known as traditional medicine. From the interview results, there were 56 plant species used as medicine.

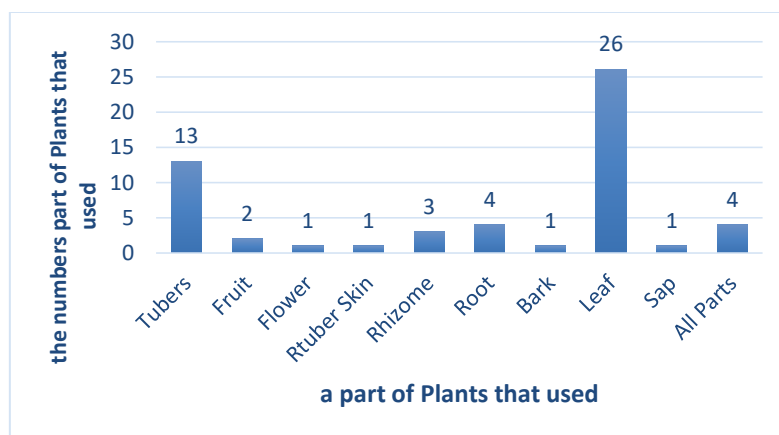


Figure 4 the Numbers part of Plants that used

The plants consisting of roots, leaf stems can have potential as medicine if the parts of the plant are believed to reduce pain to cure certain diseases. The leaf part is the part of the plant that is mostly used by the people of Gunung Bunder Dua Village (Figure 4).

Some of the Gunung Bunder Dua community groups choose to use traditional medicine because when compared to chemical treatment, this alternative medicine provides a smaller percentage of side effects. However, according to (Arief, 2001), in the use of plants used as medicine, several things must be considered, including knowledge of the types and methods of processing plants as medicine. Because if these two things are ignored, it can make a plant species endangered, so that it can threaten the continuity of existing plants.

Obtaining efficacy in plant species used as medicine in one, some or all of its parts. Where in one part of the plant has different properties from other parts in one species. So that in its use for treatment it is divided into roots, stems, leaves, bark, sap, flowers, rhizomes, tubers, fruit and even all parts (Nazmurakhman, 2014)

From the various benefits of medicinal plants used by the people, medications to reduce high blood pressure and wounds dominate compared to other benefits. People believe that the treatment for lowering high blood pressure is from the plants *Annona muricata* L. (soursop), *Anredera cordifolia* (Ten.) Steenis (binahong), *Cymbopogon nardu* (L.) Rendle (fragrant lemongrass), *Myristica fragrans* Houtt. (nutmeg), *Persea americana* Mill. (avocado), *Physalis angulata* L. (cecenet), *Santalum album* L. (Balinese sandalwood),

Syzygium polyanthum (Wight) Walp. (bay leaf) and *Ziziphus mauritiana* Lam. (bidara leaf), while for the treatment of wounds from *Ageratum conyzoides* (L.) L. (smelly jukut), *Curculigo capitulata* (Lour.) Kuntze (congkok), *Hymenaea courbaril* L. (marasi) and *Plantago major* L. (ki urat).

Plants as a post-birth herb, some of the people of Gunung Bunder Dua Village still have a habit of post-birth medicine in the form of a mixture of several plants. The plant used was *Blumea balsamifera* (L.) DC. (sembung), *Piper betle* L. (betel) and *Pluchea indica* (L.) Less. (bluntas). Processing of these plants by boiling both together, then drinking the boiled water. The concoction is believed to be able to reduce postpartum bleeding. According to (Nulfitriani, Ramadanil, & Eny, 2013), the use of traditional medicine also has a role in health care such as preventing postpartum bleeding.

In addition, there are ingredients for breastfeeding mothers. This herb is included in health care, in order to facilitate breastfeeding. The plants used were *Kaempferia galangan* L. (galangal) and *Tamarindus indica* L. (tamarind).

The existence of plants that can be used as goods will be considered as plants that have economic value because they can obtain inputs. The plants that are considered by society to have economic value are *Micranthemum emarginatum* Elliott (monte carlo) as an ornamental plant, *Metroxylon sagu* Rottb. (kirai) and *Schizostachyum blumei* Nees (tamiang bamboo) as the material for the motifs.

Currently, the community motif booths in Gunung Bunder Dua Village use more of *Metroxylon sagu* Rottb. compared to *Schizostachyum blumei* Nees. This is due to the difficulty in finding the ingredients, even though *Schizostachyum blumei* Nees is abundant but to get it you need to buy at a high price. Unlike the *Metroxylon sagu* Rottb. which can be purchased for a stalk of Rp. 2000,- and if bought, Rp. 1.200.000,-. The selling price of the motif booth is around Rp. 20.000,- up to Rp. 30.000,-.

D. Conclusion

The diversity of plant species used by the people of Gunung Bunder Dua Village, Bogor Regency, consists of 72 species of 40 families, with various uses, namely 19 species of food plants, 56 species of medicinal plants, and 3 species of economic value plants. Then the results of this research can be used as a source of learning biology in the form of grouping plants based on family, potential use, and parts used. Then the teaching material can be in the form of video media containing ethnobotany information. In addition, further research is needed

to further reveal local wisdom in Gunung Bunder Dua Village, namely in the form of an analysis of the content of plant compounds that are used in order to obtain the right formulas and do not threaten the ecosystem when abundant is needed.

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